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The Game of Inventing: Ludic Heuristics, Ontological Play, and Pleasurable Research

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Abstract

Everyone plays games, but very few of us have experience in creating games. Children are taught simple folk-games like Tag and The Floor is Lava but rarely graduate on into creating their own unique experiences through invented games. This proposal positions games as a culturally relevant medium that often suffers from players inability to understand the motivations and purpose behind a game's creation. Drawing on examples from diverse fields such as visual design, leisure studies, human-computer interaction, and multimodal composition, this chapter examines the potential for the development of "ludic heuristics" which allow composers and rhetors to both create and analyze games and play through the process of inventing their own games. This heuristic breaks down games into three components: their materials, limits, and goals. An ontological understanding of the objects, affordances, and motivations for playing a game can then be used to analyze existing games with the ultimate goal of having students create their own serious or persuasive games. As scholars such as Rebekah Schultz Colby (2017) have noted, there is a push to use digital and board games in the classroom, though there is very little established in terms of actual implementation, best practice, and pedagogical foundation for the inclusion of games. This chapter analyzes the possibilities for developing new invention practices for creating games that go beyond cloning and imitation. While the field of rhetoric has a long history of using innovative methods applied to grammar (Christensen, 1963), reappropriation and remix (Palmeri, 2012), and style (Lanham, 2006), there is little research on the application of heuristics to develop play both as an end and as a means in composing multimodal texts. This chapter argues that a framework of materials, limits, and goals lead to the development of a ludic heuristic which can then be used to produce games which model systems, produce arguments, and express beliefs.

1.   Introduction

Makers produce goods, texts, and other artifacts outside of the typical commercialized manufacturing process. They create their objects for a variety of reasons including craft and folk traditions, the desire for self-sufficiency, economic concerns, and a more intimate connection to their products (Breaux, 2017). Technological advancements in the world of game engines—tools used to construct games themselves without having to manually code each and every aspect of the game— have positioned digital games as a potentially new avenue for makers to express themselves.

Centered on the idea of students as makers, this essay analyzes the possibilities for developing new invention practices for creating texts that don't merely position play as subservient to invention, but rather utilize play and the making of games in order to teach and theorize invention itself. In order to do so, I look at two questions:

- How can the idea of games being broken down into manageable components for composers who don't have a background in game development?

- What are the pedagogical implications of having composers develop and play games as a form of researching arguments?

Ultimately, this essay answers these questions by developing a model using the tools of digital studies with a low barrier of entry for teachers to help students break away from simply arguing from deeply held beliefs and into more, complex and nuanced forms of argumentation.

In my ten plus years of teaching in first-year composition programs as well as working as a consultant in multiple writing centers, one problem seems to stop student writing more than any other: having a "good" idea. We can teach about argumentative structures, sentence construction, effective organization, deft integration of sources, audience-based writing, and proper tone until every student has several notebooks full of practical advice, but if they don't have an idea on how to start or what to write about, those lectures and activities on various aspects of the writing purpose have no use. The problem of "getting started" has always been an issue of concern to teachers of writing (Brooke, 2009). Carter (2003) and Bawarshi (2003) question the very notion of a "beginning" to writing and the problems inherent to positioning invention as taking place before the act of genuine writing. Other scholars have looked at the influence of place (Esposito, 2012) and the need for complex, "wicked" problems that students may not be equipped to write about at their current skill level (Leverenz, 2014).

There is a considerable amount of research and scholarship that demonstrates that students struggle to come up with unique topics and innovative arguments (Brooks et al., 2017; Crowley and Hawhee, 2009; Esposito, 2016). Mirra, Morrell, & Flipiak (2018) argue that a focus on consumption rather than production, especially in digital contexts, prevents students from developing the skills needed for a true literacy and, thus, cuts them off from the challenges of creating, the thrill of discovery, and the development of intellectual curiosity.

This separation of consumption and production is especially prevalent concerning digital games. In composition and rhetoric, games are typically positioned as another type of text to be analyzed (Adams, 2009; J. Alexander, 2009; P. Alexander, 2017; Ostenson, 2013). Some scholars have praised games as a nascent medium worthy of critical attention, but that attention is almost always focused on the context of playing and analyzing games. This paper seeks to fill in the other half of a gaming literacy by creating a framework for composers to create their own meaningful games. While other researchers have brought the creation of games into the classroom (Ballentine, 2015), this approach differs greatly because it focuses not on the writing tasks involved with making a game, but rather how the creation of games via an iterable heuristic allows for the subsequent discovery of new knowledge.

This article examines the potential for the development of "ludic heuristics," which allow composers and rhetors to both create and analyze texts through the process of inventing their own

games. As one of our society's newest forms of media, digital games have the potential to foster a deeper understanding of the role digital literacies and new media play in shaping our lives. While the field of rhetoric and composition has a long history of using innovative methods applied to grammar (Christensen, 1963), reappropriation and remix (Palmeri, 2012), and form (Lanham, 2006), there is little research on the application of heuristics to develop play both as an end and as a means in composing digital and multimodal texts. As scholars such as Rebekah Shultz Colby (2017) have noted, there is a push to use digital games in the classroom, though there is very little established in terms of actual implementation, best practice, and pedagogical foundation for the inclusion of games. That does not mean that there is not a groundwork for this   type of pedagogy. Starting with Gee's powerful work on literacy and video games (2003) and continuing on to contemporary discussion of creativity in the world of design (Cross, 2007), there exists a type of reasoning—abductive reasoning—that functions on the basis of imagining future possibilities and solutions rather than inferring or extrapolating from current results. The ludic heuristic allows for easier and repeatable access to the type of thinking induced by abductive reasoning.

In order to establish and build off this foundation, I construct a framework where games are composed of materials, limits, and goals. Once these components have been analyzed and explored, the composer plays the game in order to understand the "possibility space" afforded to the player and can then develop novel arguments, conclusions, and insights into how the materials, limits, and goals recursively influence each other through feedback loops. This framework of imitation, systems thinking (DeVane et al., 2010), and rhetorical analysis via Bogost's (2007) procedural rhetoric has the potential to lead to the production of a diverse array of applications, texts, and new media compositions. Ultimately, I argue that the integration of playfulness and play can be effective methods to explore our situated, material world as well as to identify the machinations and procedures of conceptual models, most notably ideologies and systems, which then can lead to the production of innovative texts, novel arguments, and new media/multimodal compositions.

2.   Tracing the History of Games and Invention

Games exist both as spontaneous acts of play and as repeatable social structures. French sociologist Roger Caillois (2001) looked at the cultural forms play shapes and devised a taxonomy of games. On one end of this imagined continuum, Caillois identified a form of play he deemed *paidia.* Paidia refers to spontaneous, malleable, and improvisational play such as in children's games of make believe where the rules frequently change and new identities are adopted as needed. At the other end of the spectrum, Caillois identified *ludus.* Ludus is a more formalized version of play. It requires fixed rules which then allow the players to rely on skill, ingenuity, effort and practice. Each of these types of play, ludus and paidia, have different strengths and benefits. The spontaneous power of play rests in paidia. It allows for any event or material to be turned into play. A forked stick can become a sling shot while a longer, straighter stick may become a sword through the power of paidia. On the other hand, ludus, which is structured and potentially systematic, makes play experiences repeatable through a sort of standardization. While this work is largely taxonomical, it is the potential for traversal back and forth between paidia and ludus that interests us here.

Caillois (2001) goes on to define the relationship between paidia and ludus stating, "[Ludus] is complementary to and a refinement of paidia, which it disciplines and enriches. It provides an occasion for training and normally leads to the acquisition of a special skill, a particular mastery of the operation of one or another contraption or the discovery of a satisfactory solution to problems of a more conventional type" (p. 29). There is tremendous potential in utilizing ludus to help composers acquire a "special skill" or a "particular mastery." Too often this takes the form of gamification where actions are motivated by certain elements of games such as reward schedules, leaderboards, points, and badges. However, gamification implemented in this matter negates the spontaneous and often

unpredictable nature of paidia that is initially required before its essence can be distilled into the repeatable performances of ludus. How then to traverse back and forth along the continuum of ludus and paidia to allow for creative improvisation and spontaneity but also allow for repeated experiences and the mastery of a skill? I argue that the answer is to have potential composers and rhetors create their own games based upon the materials they are engaging with; the limits imposed by genre, embodiment, and sociopolitical contexts; and the goals they set for themselves both beyond the game—pre-lusory goals—and within the game itself—lusory goals. The act of creating these types of systems allows for the play of paidia to assert itself while ludus irrupts from the formalized nature of the game and the potential for repeated playthroughs.

While the connection between games and invention has been made before (Gee, 2003), the focus of my argument is new because it focuses on the active creation of games and not just on their reception. Scholars such as Shultz Colby (2017) and Robison (2008) advocate for student-created games as a way to demonstrate the potential of persuasive games or as an act of multimodal composition. However, my focus here is on invention itself, with play positioned as a "pleasurable" form of research that allows composers to compare their self-created model against the real-world implementation. This allows for critique and discovery of what Finn (2017) deems the "implementation gap" that exists between any digitized model and its real-life counterpart. Analyzing the materials of a topic can lead to the creation of a game where the player organically discovers how the system works and what types of arguments can be produced from the materials.

In his influential essay on prewriting, Rohman (1964) positions the problem of invention as a "puzzle form" where the solution often arrives from the composer being able to establish and understand the patterns that comprised the puzzle. Game designer Raph Koster (2014) makes a similar argument about where fun is derived from in games. To Koster, games force players to recognize patterns and then extrapolate those patterns to new novel situations. As long as a game can continue to add small variations to the patterns and problems presented, the player will continue to have what Koster calls "fun," a pleasure derived from learning something new. So, if the problem of invention is a puzzle solved through pattern recognition, induction, and deduction, and games operate best when they force players to intuit patterns and then extrapolate solutions based on these patterns, it would seem that playing games is one way to unravel the dilemma of how we can bring about a flexible but structured, repeatable but iterative procedure for inventing. Games, through both their creation and their subsequent play, represent what Lauer (1979) identifies as the features of a strong heuristic: applicability to diverse situations (games can be about any topic or idea from saving princesses to folding proteins), flexible in their processes (creating games involves looking at materials, limits, and goals in an ecological, regressive manner), and highly generative (games produce gameplay, reflection, analysis, paratexts, social relationships, and more).

Drawing on the work of Ulmer (2002), Jan Holmevik (2012) examines the role of play in contributing to electracy. Deriving from Ulmer's Apparatus Theory of orality, literacy, and electracy, Holmevik connects play to the act of invention, noting that "to play means to invent by heuretic means" (p. 6). The values of the elecrate age fall on a continuum of pleasure/pain with individuals typically seeking pleasure and avoiding pain. Games, to Holmevik and many play and game studies scholars, represent a stable, repeatable way to explore possible solutions to problems, effectively becoming a type of heuristic in and of themselves. The problems that games can solve, especially at the level of commercial or AAA games, is limited. As Koster (2014) puts it, the vast majority of games are about primitive survival skill such as estimating the distance needed to jump to clear a stream of water or chasm, estimating the path of a projectile, and identifying possible threats in an environment. However, this does not mean that games are limited to inventing solutions solely based on survival skills. If we as instructors and educators can get potential rhetors to create their own games, then the possibility for various skills to be mastered—such as identifying the relationship between actors in a system—as well as the potential for the creator to gain new insights into the conceptual model they are creating. In this

way, having students play the game of inventing and then play the invented game allows for traversal back and forth across the spectrum of paidia and ludus.

Part of the work of the ludic heuristic then is to capture the spontaneity of paidia and quantify into it ludus. In Bernard Suits's (1978) monumental work *The Grasshopper: Life, Games, and Utopia*, he defines games as being as an "attempt to achieve a specific state of affairs [prelusory goal], using only means permitted by rules [lusory means], where the rules prohibit use of more efficient in favour [sic] of less efficient means [constitutive rules], and where the rules are accepted just because they make possible such activity [lusory attitude]" (p. 41). This definition works in tandem with Bogost's (2016) assertion in *Play Anything* that we make the unmanageable or unpleasurable into the manageable and pleasurable by finding the limits and rules already present around us and then engaging them on their own terms. Coupled with Holmevik's (2012) assertion that electrate invention is more akin to a form of play than a type of research, I propose that games can be constructed from materials, limits, and goals—both a simplification of some of Suits's original definition as well as an expansion based on Bogost's work. Playing the created game enacts a type of research in to how accurate the game models the materials in question as well as discovering new possible solutions via goals.

I will approach each of these three aspects separately in order to clarify what I exactly mean as well as to demonstrate how combining and playing with these three variables has the potential to develop arguments and foster understanding of systems and ideologies.

2.1. Playing with Materials

Our networked, digital world has a tendency to feel so complex and inexplicable that it produces apathy or ignorant bliss. Having students compartmentalize, summarize, and explicate the materials around them can foster a greater understanding of both *how* and *why* the world works the way it does.

Drawing on Bogost's (2012) work in *Alien Phenomenology,* I use his definition for objects as a proxy for the materials in the ludic heuristic. Bogost defines objects as "encompass[ing] *anything whatsoever*, from physical matter (a Slurpee frozen beverage) to properties (frozeness) to marketplaces (the convenience store industry) to symbols (the Slurpee brand name) to ideas (a best guess about where to find a 7-11)" (p. 23-4). While this definition is purposely broad, it offers a new way of conceiving the materials used to construct an argument. While materials, limits, and goals can all fall under the category of *object* under this definition, dividing objects into the three aforementioned groups allows composers to breakdown large systems or ideologies such as capitalism or feminism into more manageable chunks. These divisions then allow the composer to approach each element of an object in a more discrete way, especially when it comes to objects often taken for granted in play and game studies, such as embodiment and the potential of the computer as a metamedium. It may seem reductive or even recalcitrant to have students work with truncated or simplified models, but this work of summarizing and simplifying is necessary for any form of computation. All computer code and algorithms are simplifications of complex processes that attempt to appear objective. This leads to Finn's (2017) aforementioned implementation gap which results from the theoretical ideas of code, algorithm, and simulation being implemented into the complex, often messy world we live in. Understanding and attending to the implementation gap between the model of the materials the student has created and how the materials actually operate is one way to achieve "algorithmic reading," which Finn defines as "a way to contend with both the inherent complexity of computation and the ambiguity that ensues when that complexity intersects with human culture" (p. 2). No model or algorithm is ever entirely accurate, and having students reckon with disparities between societal understanding and computational media leads to a more critical literacy of technology. The identification of materials as the first step in the ludic heuristic allows for both a low-stakes, exploratory and spontaneous sense of research while also providing a logical starting point for an area of inquiry.

At this stage, composers do not need to have identified an argument, stance, or position. They need only to identify what the system, concept, or ideology they would like to analyze. This can take many forms such as feminism, food deserts, wastewater storage, water desalination, grammar, urban planning, late capitalism, Homecoming week, microaggressions, student fees, and refugee crises. Because invention always takes place in a situated context (Bawarshi, 2003), the student can begin to note of the features of their materials that they interact with and experience most frequently. Generating lists, a strategy that Bogost (2012) locates in much of the writing of Latour, "remind us that no matter how fluidly a system may operate, its members nevertheless remain utterly isolated, mutual aliens" (p. 40). Identifying the components of any material allows the composer to see the amount of variables they need to represent in their game as well as the potential for seemingly disparate objects to interact with each other, a hallmark of discovery learning (DuFour and Marzano, 2011). As an example, a student may take a very broad material such as capitalism and break it down into a list consisting of wages, labor, capital, means of production, competition, factories, employees, managers, and class inequality. The list need not be exhaustive. One of the tenets of Bogost's (2012) formulation of OOO is that objects are both inexhaustible—they can react, change, pair, and interact with an infinite number of other objects, always revealing new or different aspects of the original object—and incalculable— they recede infinitely into themselves like a black hole, never entirely knowable by any other object. Attempting to enumerate each and every object within the concept, system, or ideology is not only impossible, but also impedes any work the composer may currently be doing. With this list in hand and a general understanding of each component, the student can then break down components even further or begin to trace the connections between pairings or triplings that may have not been readily apparent. This is the basis for how materials are discovered and utilized in the ludic heuristic.

2.2. Finding the Limits

The second aspect to the ludic heuristic is limits. Limits are perhaps the most essential part of play. While in contemporary discourse and thought, play is considered to be a free activity unbound from the constrictions of the real world, play and game studies scholars have long argued for the importance of rules and limits. As Katie Salen and Eric Zimmerman (2003) argue, rules do not inhibit play, rather rules make play possible. In a similar manner, limits allow for invention to move from a sort of free play where anything goes and into an iterable, structurable, and teachable process of discovery.

Limits not only make play possible but also fun, and it is the electrate tendency to see issues in terms of pleasure/pain (Holmevik, 2012) that makes games a viable medium to create texts and arguments. Bogost (2016) argues that "by adopting, inventing, constructing, and reconfiguring the material and conceptual limits around us, we can fashion novelty from anything at all" (p. 223). For Bogost, all limits derive from the material, and he often uses the terms "constraint" or "material resistance" in a way analogous to how I am using "limits." Limits can be found everywhere—they are another subset of objects after all—but take on a prominent position when considered in terms of form, medium, and genre. When applied to form, we typically identify limits as affordances, when applied to medium we often refer to it as interface, and when we talk of genre, the limits become the conventions.

Limits can be derived both naturally—the height a human can jump in a track and field competition—and artificially—players, except the goalie, are not allowed to use their hands in soccer. However, just because limits are artificial or contrived does not mean that they are random or done without purpose. Suits (1978) uses the metaphor of a line to denote the space carved out by a game's limits. He argues, "For both *that* the lines are drawn and also *where* they are drawn have important consequences not only for the type, but also for the quality, of the game to be played. It might be said that drawing such lines skilfully (and therefore not arbitrarily) is the very essence of the gamewrights's craft" (p. 30). A game without defined limits is just everyday life. A game with limits too narrowly

defined ends up reducing the possibility space and transforming a player's autonomy into automation as is the case with tic-tac-toe, which ends in a draw amongst players with equal amounts of experience playing the game and eventually ceases to be a game at all. Playing with the materials to discover their limits and then translating those limits into the rules is where the electrate potential of play lies.

In fact, Bogost (2016) goes so far as to say that "art doesn't take form *despite* material resistance [limits], but *thanks* to it" (p. 161). The pleasure derived from playing a game is the player being able to stake out the expanse of the possibility space, identify its limits, and then manipulate those restraints to gain the best possible advantage in the game. Presenting the player with a series of tools and then gradually expanding the implementations of those tools is a fundamental principle of game design. Rarely is the player told what to do in order to successfully complete a level. In place of didactic tutorials, the player must experiment with the systems and limits present in a game in order to gain a deeper understanding of how the various materials interact. Play literally becomes a form of research.

The sense of discovery fostered by play functions as a means of understanding the writer's own situated perspective of the world as well as any simulation they create based on that perspective. When creating and defining limits in a game, the composer is both attempting to identify the real-world constraints such as capitalism's separation of laborers and the means of production as well as how these limits can be represented in the medium. Suits (1978) identifies two different types of limits in games: constitutive rules and rules of skill. Constitutive rules "set out all the conditions which must be met in playing the game" while rules of skill operate "within the area circumscribed by constitutive rules" (p. 37). He uses baseball as an example with "three strikes and you're out" being a constitutive rule while "keep your eye on the ball" is a rule of skill. These two different types of limits correspond directly with the goals. While limits are derived from the materials of the game, the goals are the motivating factor for both playing and understanding the game.

Bogost (2016) argues that feeling out the limits of a possibility space is where the pleasure of play comes from. When constructing the limits for a game, the composer must be aware of how those limits encourage certain types of activity while discouraging others. Limits then become a form of genre convention. Just as a sestina places exacting demands on the poet, identifying limits helps the composer and player understand how the form itself contributes to the meaning.

2.3. Constructing the Goals

One of the most powerful forms of psychological motivation is goal-setting (Landers, Bauer, and Callan, 2017). Goals can help actualize the steps in a process or incentivize big picture thinking. Thus, it is important to consider how the goals are used to motivate players while still presenting a course of action that engages with the materials and limits.

Goals in games operate in at least two ways: to motivate the player to undertake the given task and to force a level of expertise onto the player. The typical motivation in the former is that of Caillois's (2001) *agon*. The goal is to win the game. In terms of the latter, the goal often requires adopting less than efficient means—using feet instead of hands in soccer—that allows for mastery of a new type of movement, understanding, or skill. Suits (1978) argues that in a good game, it is necessary to have both types of goals operating simultaneously. He writes, "There must be an end which is distinct from winning because it is the restriction of means to this other end which makes winning possible and also defines, in any given game, what it means to win" (p. 34). Here the goals influence the utilization and adoption of materials and limits but remain distinct from them. Whatever the composer has defined as the materials and limits of capitalism, the goal they set for the player in playing the game is largely independent of the materials and more related to the composer's own situated experience. Taking over a factory and seizing the means of production is just as legitimate a goal as stockpiling as much personal wealth as possible. While both goals are legitimate, each one will push the player to reconsider how they interact with the materials and limits. The goal is often the first thing talked about when

describing a game (for example, in basketball, the goal is to win by putting the ball in the hoop), but it purposely comes last in the ludic heuristic because they largely dictate *why* the game is played while materials and limits dictate *how* the game is played. In discovering how a particular ideology or system works, composers can identify what goals are desirable for them or for the player.

In a sense, this is what Gee (2003) means when he says that video games embody good learning because they *always* believe in the power of the player. Whatever goals a game sets for the player, the player must be able to achieve them in some way. This gives rise to what Cross (2007) terms "designerly ways of knowing." He aligns this with the tradition of abductive thinking and argues that in defining problems and setting goals in design thinking these "are not problems for which all the necessary information is, or ever can be, available to the problem-solver...it will always be possible to go on analyzing 'the problem', but the designer's task is to produce 'the solution'" (p.23-24). The goal then is to use the creation of games as an act of both composition and design with the end goal being to describe the situation in a way that "both defines the limits of the problem and suggest the nature of its possible solution" (p. 24). Because each player will approach a game based on their own particular preferences, games that are well-crafted offer not only multiple potential solutions but also multiple potential paths toward that goal. In this way, when composers begin to play the games they have created, they must think of multiple solutions and not just reach for the lowest hanging fruit.

To summarize, I have argued that having potential rhetors consider the materials, limits, and goals of a system or ideology and then construct a game from those parts allows for a type of play/research where they explore the representation they have created to find new solutions, and thus new arguments.

3.   Conclusion

This paper has argued for a ludic heuristic comprised of materials, limits, and goals that can be used to create serious or persuasive games. From there, I have demonstrated how these games represent systems and ideologies so that by playing the game, a player can develop insights and conclusions about the representation that can then lead to future arguments, connections, and innovative texts. While it is always our job as instructors to push our students to engage, research, and reflect on the world around them, having our students create games represents a unique but repeatable way to explore. In particular, I believe this type of new media composing is increasingly important as a form of invention in our networked, digital world because it gives students exposure to systems thinking, engages with ideologies that they either adhere to or need to recognize in the real world, and ultimately resituates how we think of the act of composing in the composition classroom.

This potential to resituate how games are positioned in the classroom—no more are they just texts to be analyzed or diversions to make learning "fun" —closely aligns with New London Group's (1996) call for an equal emphasis on reception and production. It also tracts closely with the way scholars outside of rhetoric and composition have viewed the potential for games. One common understanding of the potential for games in learning is their ability to help with systems thinking. DeVane et al. (2010) define systems thinking as "an approach to understanding complex phenomena and problems that considers how elements of an order relate to each other and the function of the order as a whole" (p. 5). A diverse range of fields are invested in systems thinking including education, ecology, and economics. If the world we live really is becoming increasingly networked and connected, it is essential to develop skills in our students to understand how the world around them works. DeVane et al. (2010) argue that games closely resemble how real-world systems work. To truly understand these operations, students must not only analyze but also create. The ludic heuristic represents one such attempt to offer a low-bar to entry to the world of game making for serious purposes. DeVane et al. (2010) argue that "the core idea here is that by building (often times dynamic) representations of systems, learners come to understand the relationships among sub-components of

systems...acting in a simulated system (particularly when learners have *goals* within such rule-based systems) helps learners develop meta-understandings of the meaning-making model underlying the system" (p. 6). Having students create their own games based off of real-world systems and then research those representations through play represents a potentially pleasurable take on systems thinking.

In the early 2000s, Geoffrey Sirc (2002) made a bold call to return composition to its counter-cultural roots. Sirc sought to see composition as a "happening." Games can be one such option of alternative composition that is culturally relevant, useful for a workforce that is becoming increasingly gamified, and helps students understand how the world works. Games and play are not a panacea to cure the ills of the world or the classroom. However, having students create games based on an investigation of models, materials, limits, and goals can help us better understand what we want out of the systems around us. We must meet our students where they stand in this increasingly complex world and develop new ways of thinking about the act of composing and how we as instructors can help them.

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